Goddard DAAC Operational Readiness Status

presented to the EOSDIS Review Group

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Presented by
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Operational Readiness: Overview

- Operational Activities at Launch
- From Now to Launch: Schedule & Approach
- Schedule Drivers / Issues
- Preparation Status
- Additional Concerns

Definitions from MODIS 1-On-1, 12/17/97

- **Go/No Go:** Capabilities to be reviewed at the Flight Readiness Review (L-3days) that will influence the decision to launch the spacecraft.
  - Ground system must be able to produce, archive, and distribute the L0 data to the MODIS Characterization Support Team (MCST).
  - MCST would prefer to get the L1A and L1B from the DAAC.
- **Launch Critical:** Capabilities critical to performing launch, early orbit, instrument activation and instrument calibration activities (i.e. within 1st 3 months after launch). Also, activities necessary to ensure the long-term scientific integrity of the data.
- **Launch Essential:** Capabilities required to perform early science activities and early product distribution (i.e. 3- 6 months after launch)

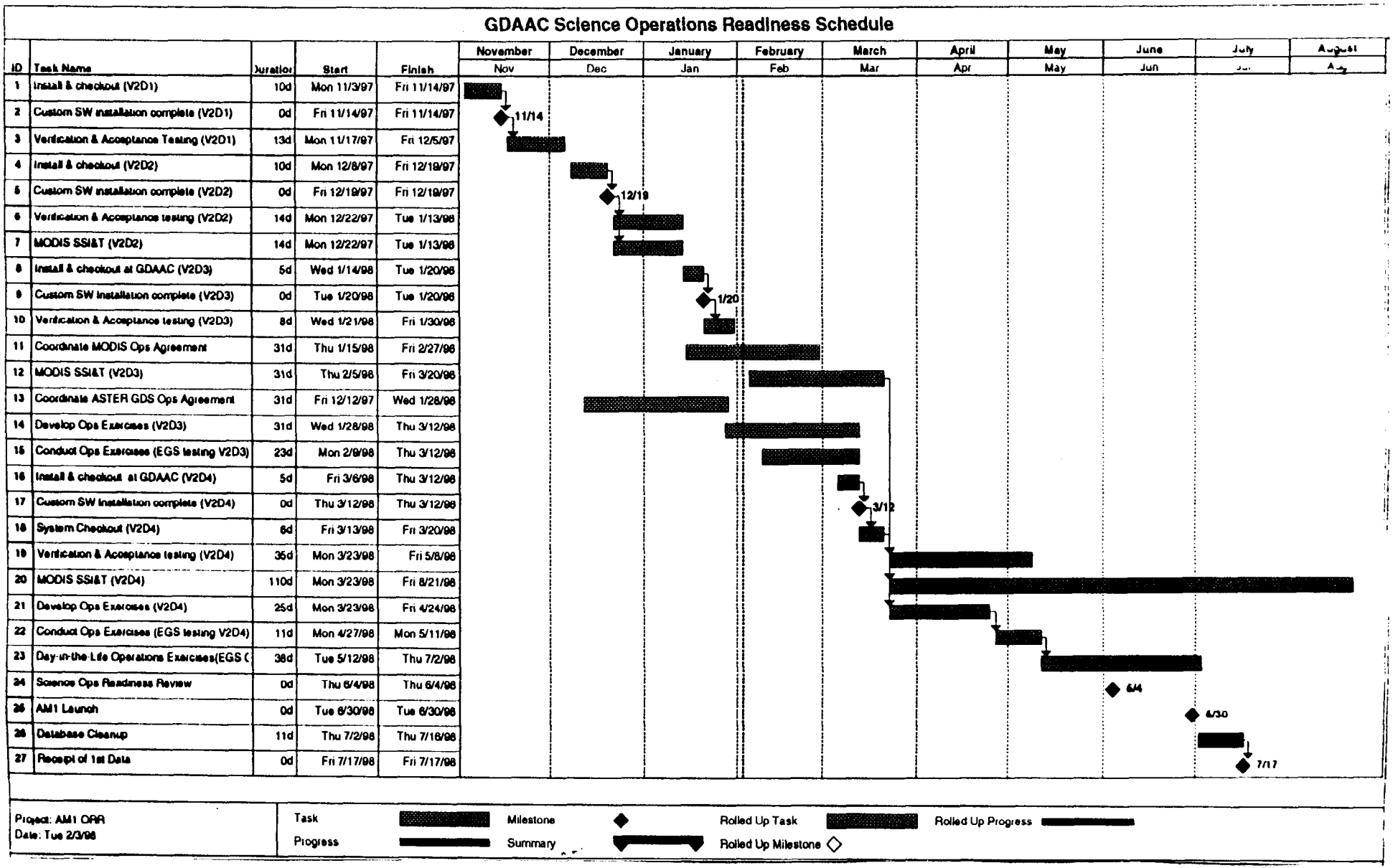
GDAAC Launch Critical Activities

- Capture and archive MODIS Level 0 data
- Capture and distribute the MODIS and Aster Expedited Level 0 data
- Produce MODIS Level 1 Products
- Distribute products to the science team
- Capture & archive all ancillary data needed for standard products
- (Level 2 Products: 1 Ocean, 1 Land)

At-Launch Operational Activities

- Operational ingest of MODIS L0 data and production of as many products as possible
- Distribution of the data products to the science team and, if possible, the public
- Ingest & distribution of the MODIS & Aster Expedited L0 data sets
- Science Software Integration & Test
- 'Validation' processing
- Support of subsequent ECS Drops

Schedule



ID	Task Name	Duration	Start	Finish
1	Install & checkout (V2D1)	10d	Mon 11/3/97	Fri 11/14/97
2	Custom SW installation complete (V2D1)	0d	Fri 11/14/97	Fri 11/14/97
3	Verification & Acceptance Testing (V2D1)	13d	Mon 11/17/97	Fri 12/5/97
4	Install & checkout (V2D2)	10d	Mon 12/8/97	Fri 12/19/97
5	Custom SW installation complete (V2D2)	0d	Fri 12/19/97	Fri 12/19/97
6	Verification & Acceptance testing (V2D2)	14d	Mon 12/22/97	Tue 1/13/98
7	MODIS SSI&T (V2D2)	14d	Mon 12/22/97	Tue 1/13/98
8	Install & checkout at GDAAC (V2D3)	5d	Wed 1/14/98	Tue 1/20/98
9	Custom SW installation complete (V2D3)	0d	Tue 1/20/98	Tue 1/20/98
10	Verification & Acceptance testing (V2D3)	8d	Wed 1/21/98	Fri 1/30/98
11	Coordinate MODIS Ops Agreement	31d	Thu 1/15/98	Fri 2/27/98
12	MODIS SSI&T (V2D3)	31d	Thu 2/5/98	Fri 3/20/98
13	Coordinate ASTER GDS Ops Agreement	31d	Fri 12/12/97	Wed 1/28/98
14	Develop Ops Exercises (V2D3)	31d	Wed 1/28/98	Thu 3/12/98
15	Conduct Ops Exercises (EGS testing V2D3)	23d	Mon 2/9/98	Thu 3/12/98
16	Install & checkout at GDAAC (V2D4)	5d	Fri 3/6/98	Thu 3/12/98
17	Custom SW installation complete (V2D4)	0d	Thu 3/12/98	Thu 3/12/98
18	System Checkout (V2D4)	6d	Fri 3/13/98	Fri 3/20/98
19	Verification & Acceptance testing (V2D4)	35d	Mon 3/23/98	Fri 5/8/98
20	MODIS SSI&T (V2D4)	110d	Mon 3/23/98	Fri 8/21/98
21	Develop Ops Exercises (V2D4)	25d	Mon 3/23/98	Fri 4/24/98
22	Conduct Ops Exercises (EGS testing V2D4)	11d	Mon 4/27/98	Mon 5/11/98
23	Day-in-the-Life Operations Exercises(EGS (	38d	Tue 5/12/98	Thu 7/2/98
24	Science Ops Readiness Review	0d	Thu 6/4/98	Thu 6/4/98
25	AM1 Launch	0d	Tue 6/30/98	Tue 6/30/98
26	Database Cleanup	11d	Thu 7/2/98	Thu 7/16/98
27	Receipt of 1st Data	0d	Fri 7/17/98	Fri 7/17/98

Approach to Operational Readiness

- Based on GDAAC-Developed Scenarios
  - 22 Launch Critical (LC) Scenarios
  - 16 Launch Essential (LE) Scenarios
- AT tests based on LC Scenarios
- Certification / Day-in-the-Life Operational Readiness Exercises will encompass all LC and as many LE Scenarios as possible

Approach to Operational Readiness (2)

- SSI&T and ECS Drops each have dedicated modes and will be exercised independently
- Successive ECS S/W Drops give ECS and the DAACs operational experience and exercise/shakeout support processes
  - Drop 1: limited functionality; surfaced configuration (custom code & COTS), installation issues
  - Drop 2: automated install, fewer configuration issues; surfaced training, help desk issues
  - Drop 3: DAAC staff did installation; surfaced CM, patch turn-around time issues

Schedule Drivers/Issues

- ECS installation schedule, including Version Description Doc. w/work-arounds

Issue: At-Launch Delivery 12 March; Little time for test, correction of problems: 7 wks Acceptance Test, 7 wks Certification Test/Ops Readiness Exercises

Mitigations:

- Operational Experience & Early Testing
- ECS meets dates, slips functionality as necessary.
- System capabilities prioritized by LC functionality
- Drop 3 expected to support test definition and SSI&T on L1 PGEs in February

Schedule Drivers/Issues (2)

- ECS Installation Schedule, cont'd

Issue: Installation process on early drops did not leave the system in a fully configured, operationally ready state

Mitigation:

- ECS adding minimum set of DAAC-Specific Criteria to installation check-out.
- Installation check-out at DAAC done using Operational account permissions, not as 'root'.
- DAAC-specific post-installation integration, account set-up & configuration, and test

Schedule Drivers/Issues (3)

- ECS Installation Schedule, cont'd

Issue: Uncertain of Drop Contents

Mitigation:

- Received list of capabilities by drop 12/17
- New web-based baseline/VDD good template; will iterate on content
- System Interrogation scripts will allow local characterization, comparison to COTS baseline
  - Looking for similar process wrt custom code, VDD
- Operational Experience, Test; Work-around development

Schedule Drivers/Issues (4)

- ECS Installation Schedule, cont'd

Issue: Process for S/W Patches Cumbersome (>15 days)

Mitigation:

  - ECS established (1/30/98) Patch Review Board to determine Patch contents (fixes, new functionality, performance improvements) and Integrated Product Teams to implement patches in timely fashion
  - DAAC participation in PRB essential; ESDIS participation needed to resolve conflicts

Schedule Drivers/Issues (4)

- MODIS SSI&T

Issue: Uncertainty in PGE delivery schedule, particularly the 3 Level 1 (LC) PGEs in their initial and at-launch versions

  - Need LC PGEs to begin chaining tests; verify system & PGE capabilities to handle large data volumes
  - MODIS L1A algorithm requires alteration to work with as-built data stream; 4/1 deadline for Certification test
  - General agreement on algorithm priorities emerged from 1-on-1, 12/17/97.

Issue: Validation Processing needs further definition, test.

Mitigation: GDAAC will test concept on Drop 3; if it works, will formalize criteria for PGEs to be accepted for Validation Processing, policies for data distribution, etc.

Schedule Drivers/Issues (5)

- ECS M&O documents
  - All relevant documents (611, 609, 305, 311, 313) will be in draft form by January
  - DAAC-specific modifications to the documents will be made starting with Drop 3
  - No risk at this time
- Network availability and check-out schedules
  - GDAAC networks installed and functional
  - Schedules to check-out network performance appear to be limited to ICT interface and ECS functional tests
  - We do not carry this as a risk at this time

Required Planning Documents Progress & Status

- Operations Agreements with instrument teams
  - MODIS
    - SSI&T Agreement for Version 2 PGEs is in draft status; expected to be finalized shortly
    - Operations Agreement covering Operational Production drafted and internally reviewed. Will be edited and sent to SDST for review.
    - Science Agreement covering QA and other issues handled by the GDAAC Data Support Team being drafted
    - OAs between DAACs are at planning/discussion stage

Required Planning Documents
Progress & Status (2)

- Operations Agreements with instrument teams
  - ASTER
    - Ops Agreement regarding expedited data drafted by ESDIS, reviewed by GDAAC & ASTER; final version due out shortly.
- Operations Agreements with external data sources
  - EDOS : will be written by EDOS, reviewed by DAAC
  - Ancillary data will come from a GDAAC server; does not require an OA. MOUs with ancillary data providers are handled by GDAAC Science Data Support Lead, George Serafino.

Required Planning Documents
Progress & Status (3)

- Operational readiness exercise plans/scenarios and sustained operational simulations
  - Organized 20 teams, each responsible for developing test procedures for 1 Launch Critical Operations Rehearsal and carrying it out on drops 3 & 4, as well as conducting AT tests. Combinations will serve as Day-in-the-Life tests. Working with EGS testers to define and carry out the tests.
  - Developing ORR activities checklists by org. unit (eng, ops, DST, ILS) & by position.

DAAC Preparation

- Facility preparation status
  - Construction of office space 12/97 - 2/98
  - Responsible for Facility Administration 1/20/98
- DAAC-specific operational procedures
  - On-going development as a result of operational experience with Drops; Adaptation of DID 611 beginning with Drop 3
  - Operational responsibility for System Administration, DB Admin, H/W & Network Admin 1/20/98; transfer of CM responsibility under discussion, dependant on tools

DAAC Preparation (2)

- Staffing plan
  - ECS contractor support ramp accelerated; contractual ceiling and desired staffing levels being worked
- Training
  - Drops providing invaluable OJT
  - Training Budget for GDAAC through 2002 increased from $7K to $135K per GDAAC requirements
    - Some courses (e.g., DCE) require a group; GDAAC cannot schedule this training alone; coordinating DAACs via Ops Working Group, will work scheduling via ECS

Additional Concerns: SSI&T

- ESDT Stability: Baseline date and location
  - Changes occur @ DAAC; baseline @ ECS Science Office until Drop 4.
- MODIS test data generation, storage, access
  - Being worked through ESDIS/ECS; ~20 hrs to make 2 hrs of test data
  - Need data for 'as-designed' and 'as-built' L0 data.
- Process for PGE promotion to Ops; need to establish any external reviews soon.

Additional Concerns: Inexperience with Mode Mgmt

- Resource Allocation & re-allocation among:
  - Operational Production (MODIS PGEs, DAAC-unique PGEs)
  - SSI&T / Validation Production
    - Planned Augmentation helpful here
  - ECS new drop/test mode

Additional Concerns: DAAC-Unique Extensions

- Integration of locally-developed SSI&T Productivity Tools on the Ops system
  - will submit CCR
- ESDIS request for Ancillary Data Ingest & ESDT development
  - GDAAC S/W Maint Engr detailed to Landover to work all MODIS ancillary products; learn on existing products, implement 2 new products

Additional Concerns: DAAC-Unique Extensions (No Change)

- Anonymous FTP for Selected Subsets
  - DAAC-Unique H/W for Distribution
  - Very small effect on ECS if implemented as subsetting PGE
  - Handles 'Request from Hell'
- Ingest: leave data on disk if ingest fails
  - May not have to implement at launch

Conclusion

- Schedule is Tight
- Successive Drops with Schedule Stability is a Promising Strategy
- Issues with ECS must be worked in a rapid, constructive fashion as they arise